

REMARKS

Formal Matters

Claims 29-30, 36-40, 46-49, 52-54 are currently pending in this application. Claims 1-28, 31-35, 41-45 and 50-51 were previously canceled.

This paper is responsive to the Notice of Non-Compliant Amendment mailed March 17, 2008, in which it was noted that the claims presented did not match the claims as filed with the Response dated August 22, 2007. The claims have been corrected such that they are now the same as those presented in the Amendment filed August 22, 2007. A Petition for a 2-month Extension of Time and requisite fee are included with this response. The Remarks are otherwise the same as those filed with the Applicants response dated January 25, 2008.

Applicants note, with appreciation, that several objections and rejections to the claims have been withdrawn.

In view of the Examiner's earlier restriction requirement, applicant retains the right to present withdrawn, cancelled and unclaimed subject matter in continuing prosecution.

35 U.S.C. § 112, Second Paragraph

The Office Action maintains the rejection of claims 29, 30, 36-40, 46-49 and 52-54 under 35 U.S.C. § 112, Second Paragraph for being allegedly indefinite for reciting the term "specifically" with reference to an antibody that "specifically binds to a *patched-2* polypeptide."

While Applicants agree that antibodies raised against an antigen may bind an epitope on the antigen to which it was raised, and that same epitope may reside on another similar or unrelated protein, such reactivity is known in the art as a **cross-reaction** and not specific binding. Applicants invite the Examiner's attention to a classic textbook on Antibodies, Ivan Roitt, *et al.* IMMUNOLOGY, Grower Medical Publishing Ltd., 1985, p. 6.3 ("Roitt") (a copy is attached for the Examiner's convenience). In Roitt, the two terms are clearly defined and establish the well-known and accepted definitions in the art:

Antigen-antibody reactions can show a high level of specificity, that is the binding sites of antibodies directed against determinants on one antigen are not complementary to determinants of another antigen...However, when some of the determinants of an antigen, A, are shared by another antigen, B, then a proportion of the antibodies directed to A will also react with B. This is termed *cross reactivity*. The specificity and cross-reactivity expressed by an antiserum are properties which result from the antibody molecules within the serum.

Roitt at 6.3

The Examiner relies on Van Regenmortel to support his rejection. First, it should be noted that Van Regenmortel was published **after** the Applicants' priority date and is an inappropriate reference to define a term of art at the time of filing. Moreover, Van Regenmortel itself states:

The purpose of this paper is not to review our understanding of the process of immune recognition, but rather to discuss the notion of specificity itself and the way this concept has been used in the field of immunology.

Van Regenmortel at pp. 37-38.

Thus, it is clear that Van Regenmortel's discussion of specificity represents a departure or new concept in use of the term "specificity" than the accepted term in general use in the field of immunology at the time of filing. The Examiner relies on this post-filing, commentary (referred to in the Title as "Reflections") without any evidence that it is the prevailing definition of specificity, nor has the Examiner shown that this represents the now-accepted interpretation in the art.

Finally, even an inspection of Van Regenmortel (Figure 1, for example) shows that reactivity of an antibody raised against Antigen 1 with the same epitope as Antigen 2 is referred to as "cross-reactivity," consistent with the discussion in Roitt above.

Applicants believe the reliance on Van Regenmortel is wholly inappropriate, both with respect to the publication date of Van Regenmortel, and due to its nature as "one man's

commentary" rather than art-accepted terms. Instead, Applicants earnestly submit that Roitt represents the accepted terminology in the art.

Applicants respectfully request reconsideration and withdrawal of the rejection of Claims 29, 30, 36-40 and 46-49 and 52-54 under 35 U.S.C. § 112, Second Paragraph.

35 U.S.C. § 103(a)

The Office Action maintains the rejection of claims 29, 30, 36-40, 46-49 and 52-54 under 35 U.S.C. § 103(a) as allegedly being obvious over Motoyama *et al.*, (1998) *Nat. Genet.* 18(2): 104-106 in view of U.S. Patent No. 5,932,448 to Tso *et al.* ("Tso").

The Examiner concedes that Motoyama does not teach or suggest antibodies that bind to human patched-2 or even mouse patched-2. Furthermore, the Examiner concedes that Motoyama does not teach a patched-2 protein with the claimed sequence identity to SEQ ID NO:2; the protein disclosed by Motoyama is described by the Examiner as "89.3% similar" to SEQ ID NO: 2 (Office Action dated Oct. 30, 2007, p. 6, lines 11-13). The Office Action argues that it would be obvious to use the method described by Tso to produce antibodies against mouse patched-2, and that such antibodies would fall within the scope of the claimed invention. The Examiner also relies on his erroneous interpretation of the term "specifically bind" to support the rejection under 35 U.S.C. § 103(a).

In view of the discussion above, Applicants request that the Examiner reconsider the rejection under 35 U.S.C. § 103 over Motoyama in view of Tso. As stated in Applicants previous response, Motoyama does not teach a polypeptide with the requisite degree of identity to SEQ ID NO:2, and the references (alone or in combination) fail to teach or even suggest antibodies that specifically bind to a polypeptide having the amino acid sequence of SEQ ID NO:2.

As discussed above, when assessing the scope and content of the prior art, the Examiner has relied on an erroneous and inappropriate reference to interpret the term "specifically bind." Thus, the art applied against the claims (Motoyama) is given a broader reach than what Motoyama actually teaches (*i.e.*, the reference does not teach any polypeptide having an amino acid sequence that is at least 95% identical to SEQ ID NO:2). Thus, when

considering the prior art as a whole (Motoyama and Tso) and the claimed invention as a whole, there is a significant difference between the claimed invention and the prior art. One of ordinary skill in the art could not produce the claimed invention armed with the disclosures of Motoyama and Tso, nor predict what properties an antibody against a human patched-2 polypeptide would possess.

Applicants earnestly submit that claims 29, 30, 36-40, 46-49 and 52-54 distinguish over Motoyama in view of Tso, and respectfully request withdrawal of the rejection under 35 U.S.C. § 103(a).

SUMMARY

Claims 29, 30, 36-40, 46, 49 and 52-54 are pending in the application.

If in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is strongly encouraged to call the undersigned at the number indicated below.

This response/amendment is submitted within the three month shortened statutory period, and as such, it is believed that no fees are due. However, in the unlikely event that this document is separated from the transmittal letter or if fees are required, applicants petition the Commissioner to authorize charging our Deposit Account 07-0630 for any fees required or credits due and any extensions of time necessary to maintain the pendency of this application.

Applicants respectfully request allowance of the claims as presented herein.

Respectfully submitted,
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